

South America: A Few Words about its Geology, Geography, Anthropology and History

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Abstract

This article addresses geological, geographical, anthropological and historical issues concerning South America. Remnant of the western part of the old supercontinent Gondwana, with an area of more than 17,000,000 square kilometres and home to almost half a billion people, South America is the fifth most populous continent (after Asia, Africa, Europe and North America) and ranks fourth (after Asia, Africa and North America) in terms of size. Refined civilizations did exist in ancient South America, notably in the Andean region. Long before Columbus' time, America seems to have been foreseen both in Literature and Philosophy.

Keywords: Geology; Geography; Anthropology; History; South America

"You can never cross the Ocean unless you have the courage to lose sight of the shore".

Christopher Columbus

Introduction

It can be said that Geology is the science that studies what is below ground, but it is also true that Geography studies what is above ground [1]. Geography stands at the crossroads connecting other sciences, resorting them ceaselessly in order to provide the interpretation of the world that fits her. So much so that "she asks History the name of the army that irrigated with its blood that valley. She asks the Geology about what stone nourishes the walls of the abbey built on a hill, and asks the Geomorphology where the hill comes from" [2,3]. The first human manifestations of interest in the physical world are geographical; our very interpretation and understanding of the Creation of the world demands a geographical vantage point [4]. One can also state that Geography is twin sister of Philosophy and History; Herodotus of Halicarnassus (c. 484 BC - c. 425 BC) - who gave due attention to the monuments of Egypt, visited Phoenicia, "saw the wonders of Babylon" [5] and entered the Persian Empire - and his precursor Hecataeus of Miletus (550 BC - c. 476 BC) were both historians and geographers [6]. The

following lines provide an overview of South America (a part of the world ignored by the Greeks, as well as by the ancient and medieval cultures in general) as geological, geographical and historical entity.

Figure 1: Patagonia (Photo taken by the Author in 2004).

Excepted for Antarctica, South America is the last continent to be inhabited by man [7]; considering that the first ancestors of the *Homo americanus* (if we can call him like that) migrated from Northeast Asia to America through Beringia c. 40.000 years ago, it is plausible to consider that South America first human settlements are not older than 15,000 years and not younger than 12,000

years [8]. Patagonia and Tierra del Fuego were reached c. 10,000 years ago, being the Argentinian Ushuaia and the Chilean Punta Arenas and Puerto Williams the southernmost cities in the whole world. Southwards is Antarctica, a continental desert of ice barely inhabited by man, given its harsh climate [9].

Figure 2: Island of Chiloé, in Chile
(Photo taken by the Author in 2004).

An isolated world

Remnant of the western part of the old supercontinent Gondwana, South America evokes the shape of an enormous tree leaf pointing south, with its southern tip not too far from the Antarctic Peninsula (if we can consider “short” the distance of c. 800 kilometres), which by its turn looks like an enormous index finger facing north. With an area of more than 17,000,000 square kilometres and home to almost half a billion people, South America is the fifth most populous continent (after Asia, Africa, Europe and North America) and ranks forth (after Asia, Africa and North America) in terms of size. Gold, silver, copper, iron ore, tin and petroleum are among its major mineral resources. South America’s biodiversity is amazing, both in fauna and in flora, as the natural result of its large variety of ecosystems.

Figure 3: Colonia de Sacramento (Uruguai)
(Photo taken by the Author in 2009).

Physical connection between North America (which was part of the supercontinent Laurasia [10,11]) and South America is relatively recent: it took place c. 3 million years ago, in the late Miocene, giving birth to the Panama Block, closing this way the Bolivar Through and leading to the so-called Great American Interchange, which was “an important late Cenozoic paleozoogeographic event in which land and freshwater fauna migrated from North America via Central America to South America and vice versa, as the volcanic Isthmus of Panama rose up from the sea floor and bridged the formerly separated continents” [12]. The continent discovered by Christopher Columbus (1451 - 1506) is the only one to be bathed by the two largest oceans of our planet, namely the Pacific and the Atlantic. Interposed vertically between them, from the glacial latitudes of the Arctic Ocean to those of the Antarctic, America as a whole represents a solid barrier that prevents the equatorial and tropical waters from the Atlantic and the Pacific from communicating; as a biological result, marine life of one ocean became isolated from that of the other.

Figure 4: Tiwanaku (Bolivia)
(Photo taken by the Author in 2000).

“Isolation” also is, by the way, the *leitmotif* when it comes to the relationship between the *homo americanus* - that is to say, the first human inhabitants of the three Americas - and those of the Old World (part of Europe, Asia and Africa). When the first Europeans arrived, under the command of Columbus in 1492, most of the American population still lived as in the Stone Age [13]. Indeed, began about 40.000 years ago, the Upper Paleolithic culture “spread over a vast and homogeneous area from Siberia to Western Europe; the Neolithic Era marked the dispersion throughout the world of a form of society dependent on agriculture and livestock, also characterized by pottery and the worship of the dead. But progress does not follow a single direction” [14].



Figure 5: Northern Peru (Photo taken by the Author in 2000).

Refined civilizations did exist in ancient South America, notably in the Andean region. They date back as far as 1000 BC, being the Chavín-Secchin (c. 900 - 200 BC) the most accomplished of those first pre-Incan cultures, an authentic *cellula mater* of those who followed, namely the Paracas-Nazca (c. 200 BC - c. 500 AD), the Huari-Tiwanaku (c. 750 BC - c. 1000 AD) and the Moche-Chimu (c. 200 BC - c. 1400 AD), immediate precursor of the Inca Empire (1438-1533), who were able to build an authentic and thriving empire, the largest one in whole pre-Columbian America. Having its center in Peru (Cuzco) and utilizing the Quechua as official language, the Inca Empire, at its largest, stretched from southwest Colombia to northwest Argentina and central Chile [15].

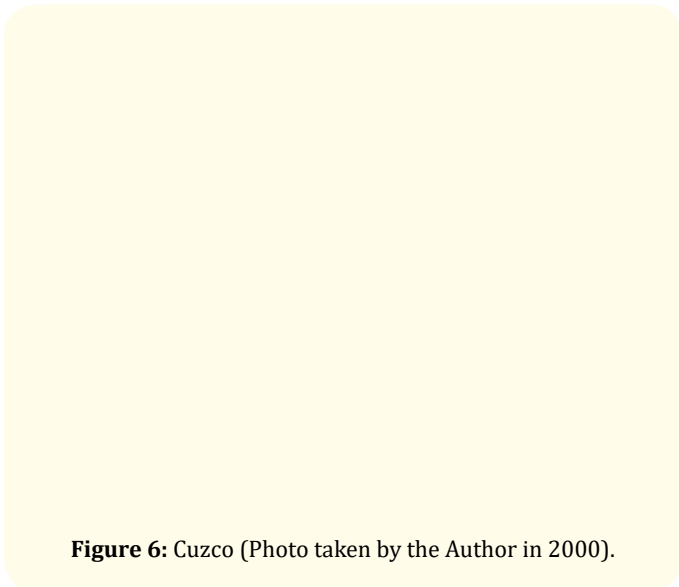


Figure 6: Cuzco (Photo taken by the Author in 2000).

Provisional Conclusion

European colonization was the social effect the Discovery and the Conquest, being Spain the protagonist, followed almost simultaneously by Portugal (in 1500 the Portuguese Pedro Álvares Cabral discovered Brazil), and later by France, England and Holland: “After enduring a long and testing voyage across unknown regions of the Atlantic Ocean, the Genoese mariner Christopher Columbus came within sight of land in the early morning of 12 October 1492. On making shore, he was convinced that a westward sea passage to the mainland of Asia had been found and that the purpose of his exploration could now be realized: to obtain a licence from the rulers of Japan and China to establish a private trade in gold and spices under the auspices of this patrons, the Catholic Monarchs of Spain” [16]. Columbus had historical (the Vikings headed by Leif Erikson around the year 1000), potential (Saint Brendan and his monk companions from Ireland in the 6th century) and legendary (Phoenicians) predecessors [17]. The New World seems to have been foreseen in Literature, one millennium and a half ahead, namely by Seneca in his *Medea* [18]. Ancient (Crates of Mallus) and medieval (Pierre d’Ailly) philosophers argued in favour of the existence of other continents in the southern hemisphere (e.g. South America, Antarctica and Australia, until then no more than *terrae incognitae*), serving as an aesthetical counterweight to those of the northern hemisphere, in which the Old World was located [19]. All this enables us to echo the Mexican thinker Alfonso Reyes (1889 - 1959) when he states that “Before being noticed due to its presence, America was noticed because of its absence. In the language of pre-Socratic Philosophy, let us say that the world, without America, was a case of imbalance among the elements, of excess, of *hybris*, of injustice. America, for some time, seemed to deviate from the keel of the fascinated explorers” [20].

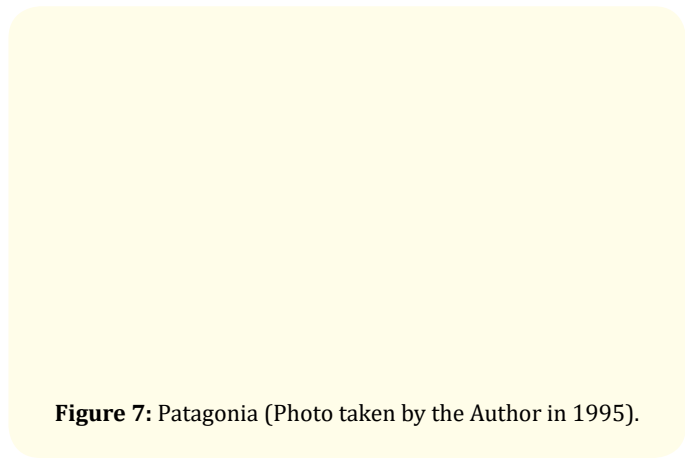


Figure 7: Patagonia (Photo taken by the Author in 1995).

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4. See Jerry Brotton. "Die Geschichte der Welt in Zwölf Karten". (Translated from English into German by Michael Müller), Munich, Random House (2014): 41.
5. Leopold von Hanke. "Geschichte des Altertums". Bern, Hallwag (1938): 329.
6. "Geographically speaking, the world that Herodotus knew stretched from Susa to Carthage, and from the Black Sea to Egypt" (Eric Voegelin. *Order and History. The World of the Polis*, Baton Rouge/London, Louisiana State University Press (1957): 334.
7. Annt Elzinga., *et al.* "Colonization of Antarctica refers to having humans including families living permanently on the continent of Antarctica. Currently, the continent only hosts a temporary transient population of scientists and support staff. Antarctica is the only continent on Earth without indigenous human inhabitants. At present scientists and staff from 30 countries live on about 70 bases (40 year-round and 30 summer-only), with an approximate population of 4000 in summer and 1000 in winter. There have been at least eleven human births in Antarctica, starting with one in 1978 at an Argentine base, with seven more at that base and three at a Chilean base" (2019).
8. Barbara Winter., *et al.* "Beringia is defined today as the land and maritime area bounded on the west by the Lena River in Russia; on the east by the Mackenzie River in Canada; on the north by 72 degrees north latitude in the Chukchi Sea; and on the south by the tip of the Kamchatka Peninsula. It includes the Chukchi Sea, the Bering Sea, the Bering Strait, the Chukchi and Kamchatka Peninsulas in Russia well as Alaska in the United States" (2019).
9. David Cristal., *et al.* "Antarctica is a frozen desert with little precipitation; the South Pole receives less than 10 cm (4 in) per year, on average. Temperatures reach a minimum of between -80°C (-112°F) and -89.2°C (-128.6°F) in the interior in Winter, and reach a maximum of between 5°C (41°F) and 15°C (59°F) near the coast in summer" (2019).
10. Alfred Wegener., *et al.* "Laurasia was the more northern of two supercontinents (the other being Gondwana) that formed part of the Pangaea supercontinent around 335 to 175 million years ago (Mya). It separated from Gondwana 215 to 175 Mya (beginning in the late Triassic period) during the breakup of Pangaea, drifting farther north after the split" (2019).
11. Johannes Ebert., *et al.* "Die grosse Chronik Weltgeschichte: vom Urknall zu den ersten Lebensformen: von 13.7 Mrd bis 292 Mio". Gütersloch/Munich, Wissen Media (2008): 284-285.
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18. See Medea, 375-379.
19. See Erwin Raisz. "Cartografia geral". (Translated from English into Portuguese by Neide Schneider e Péricles Neves), Ed. Científica, Rio de Janeiro (1969): 15.
20. "El destino de América". In Fuentes de la cultura latinoamericana (organized by Leopoldo Zea), México, Fondo de Cultura Económica (1993): 253.

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